<u>IN THE DRAWINGS</u>

The attached sheets of drawings include changes to Figs. 23 and 24. These sheets, which include Figs. 23 and 24, replace the original sheets including Figs. 23 and 24.

Attachment: Replacement Sheets

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-26 are currently pending, Claims 22-26 having been withdrawn from consideration. No claim amendments are presented, thus, no new matter is added.

In the outstanding Office Action, the drawings were objected to; the specification was objected to; Claims 1, 2, 7, 8, 13-16, and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zhu et al. ("A Source-based Algorithm for Delay-Constrained Minimum Cost Multicasting," hereafter "Zhu") in view of Ishioka (U.S. Patent No. 6,999,422); and Claims 3-6, 9-12, and 17-20 were objected to as being dependent upon a rejected base claim but containing allowable subject matter.

Applicants thank the examiner for the indication of allowable subject matter. However, Claims 3-6, 9-12, and 17-20 are maintained in dependent form because Applicants believe the independent claims include allowable subject matter as discussed below.

With respect to the objection to the drawings, Applicants submit that the present amendments to Figs. 23 and 24, adding a "background art" label, overcomes this ground of objection.

With respect to the objection to the specification, Applicants submit that the present amendment to the specification, deleting the embedded hyperlinks, overcomes this ground of objection.

With respect to the rejection of Claim 1 under 35 U.S.C. §103(a), Applicants respectfully traverse this ground of rejection. Claim 1 recites, *inter alia*,

> the multicast transfer route computing apparatus compares the greatest delay with a predefined delay condition, re-defines the delay condition if the greatest delay does not satisfy the delay condition, searches, if a condition that the shortest route satisfies is found, a partial route in the computed shortest route that has two of the

same kind or different kinds of the starting point, the
ending points, and branching points, as ending nodes of the
partial route, that has none of the starting point, the ending
points, and branching points in the middle, and that incurs
the greatest cost, removes the searched partial route from
the computed shortest route thereby to divide the multicast
transfer route into two route trees, and sets a route
computed separately as a complementary route that
complements the removed route to connect the two route
trees.

Zhu is directed to an algorithm for constructing minimum-cost multicast trees with

delay constraints. Zhu describes a network model which includes a source node, a

destination node, and a relay node (see Section 2). Zhu also describes a link-cost function

being associated with the utilization of a link, a link-delay function being the total delay over

a link, and an assigned upper-bound for delay along a path between source and destination

(see Section 2). Zhu describes the Bounded Shortest Multicast Algorithm (BSMA), which

takes an initial multicast tree (also called a "Steiner tree") which has a minimum-delay and

refines the tree for low cost while staying below an upper bound of delay (see Section 3.1 and

3.2).

However, Applicants submit that Zhu does not disclose or suggest ""the multicast

transfer route computing apparatus *compares the greatest delay with a predefined delay*

condition, re-defines the delay condition if the greatest delay does not satisfy the delay

condition, searches, if a condition that the shortest route satisfies is found, a partial route

in the computed shortest route that has two of the same kind or different kinds of the

starting point, the ending points, and branching points, as ending nodes of the partial

route, that has none of the starting point, the ending points, and branching points in the

middle, and that incurs the greatest cost, removes the searched partial route from the

computed shortest route thereby to divide the multicast transfer route into two route trees, and

sets a route computed separately as a complementary route that complements the removed

route to connect the two route trees," as defined by Claim 1.

Furthermore, as stated in the Applicants' specification, Zhu has problems in its

technique in which the cost of the entire route is reduced by computing low cost routes that

satisfy the delay condition because this re-computation of routes takes a long time.

Additionally, Applicants submit that the technique of Zhu is based on an assumption that a

link causes the same delay regardless of a direction, upstream or downstream. However,

delay caused by a link in an actual network depends on the direction. (See specification, at

page 4, line 29 to page 5, line 25).

Applicants note that in relation to Claim 1, the Office Action states the following

about Zhu:

> "The method comprises the following steps: the
> multicast transfer apparatus measures a traffic state of each
> direction in which data flow through each link of the
> network and requests the multicast transfer route
> computing apparatus to compute multicast transfer routes
> by transmitting the measured traffic state (section 3.2. The
> system measures network paths prior to transmission
> establishment); also, Zhu discloses (see section 3.2, figs 3-
> 8) a method wherein, when generating a multicast tree, the
> multicast tree is generated by calculating the paths that
> minimize delay between the start point and each end point,
> the multicast tree is divided into two partial trees by
> deleting the path having the greatest cost in the multicast
> tree, and alternate path that full-fills the delay related
> condition and has a low cost is used in place of the
> aforementioned deleted path, and aforementioned alternate
> path is used to link the two aforementioned divided partial
> trees, thereby correcting the multicast trees and satisfying
> the multicasting conditions."

However, in the Office Action's analysis, is still does not actually show that Zhu

discloses or suggests all of "the multicast transfer route computing apparatus compares the

greatest delay with a predefined delay condition, re-defines the delay condition if the greatest

delay does not satisfy the delay condition, searches, if a condition that the shortest route

satisfies is found, a partial route in the computed shortest route that has two of the same kind

or different kinds of the starting point, the ending points, and branching points, as ending

nodes of the partial route, that has none of the starting point, the ending points, and branching points in the middle, and that incurs the greatest cost, removes the searched partial route from the computed shortest route thereby to divide the multicast transfer route into two route trees, and sets a route computed separately as a complementary route that complements the removed route to connect the two route trees," as defined by Claim 1.

Applicants note that the Office Action acknowledges that Zhu fails to disclose or suggest "measuring the delay time, and selecting the shortest path based on the measurement." (See Office Action, at page 4). However, as described above, this does not state the full deficiency of Zhu with regard to Claim 1.

Therefore, Applicants respectfully submit that the Office Action has not properly addressed all the features of Claim 1, and therefore the rejection of Claim 1 under 35 U.S.C. §103(a) is improper and must be withdrawn.

Ishioka has been considered but also fails to disclose or suggest "the multicast transfer route computing apparatus compares the greatest delay with a predefined delay condition, re-defines the delay condition if the greatest delay does not satisfy the delay condition, searches, if a condition that the shortest route satisfies is found, a partial route in the computed shortest route that has two of the same kind or different kinds of the starting point, the ending points, and branching points, as ending nodes of the partial route, that has none of the starting point, the ending points, and branching points in the middle, and that incurs the greatest cost, removes the searched partial route from the computed shortest route thereby to divide the multicast transfer route into two route trees, and sets a route computed separately as a complementary route that complements the removed route to connect the two route trees," as defined by Claim 1.
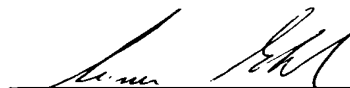
Therefore, Applicants respectfully submit that Claim 1 (and all associated dependent claims) patentably distinguishes over Zhu and Ishioka, either alone or in proper combination.

Independent Claims 7 and 15 recite features similar to those of Claim 1 discussed above. Therefore, Applicants respectfully submit that Claims 7 and 15 (and all associated dependent claims) patentably distinguish over Zhu and Ishioka, either alone or in proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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